

CLAIMS

1 1. A method of manufacturing a hollow core door,
2 the method comprising the steps of:
3 providing a solid wood composite flat blank
4 having a density of at least about 550 kg/m³;
5 moisturizing the flat blank to raise its
6 moisture content;
7 applying a liquid conditioning thermal curable
8 resin to at least one major surface of the flat blank;
9 pre-heating at least a surface of the flat
10 blank to a temperature of at least about 80° C.;
11 after said pre-heating step has been performed,
12 positioning the flat blank into a press between first and
13 second platens, at least one of the platens being heated;
14 reforming the flat blank into a molded door
15 skin including a plurality of panels defined therein by
16 closing the press; and
17 affixing at least a first molded door skin to a
18 first side of a door frame and affixing a door skin to an
19 opposite second side of the door frame.

1 2. The method of claim 1, wherein the density
2 of the flat blank, prior to said pressing step, is from
3 about 550 to 120 kg/m³.

1 3. The method of claim 1, wherein the bond
2 strength of the flat blank prior to said pressing step is

3 less than about 2.0 N/mm², and wherein the bond strength
4 of the molded door skin after said pressing step is at
5 least about 2.0 N/mm² so that said pressing step in
6 combination with at least said applying a conditioning
7 resin step increases the bond strength of the skin.

1 4. The method of claim 1, wherein said
2 pressing step closes the press at a rate at least about
3 0.25 mm per second.

1 5. The method of claim 1, further comprising the steps
2 of:
3 determining at least one of the following parameters of
4 the blank, the hardness, density, density profile, depth of molding,
5 and percentage binder or resin content of the flat blank; and
6 closing the press at a predetermined closing rate that in
7 advance is determined by and is a function of the determined
8 parameter of the flat blank.

1 6. The method of claim 1, wherein in said closing step,
2 pressure applied in closing the press is uninterruptedly increased
3 until the press reaches a closed position where the blank therein is
4 in the form of the molded door skin having the plurality of panels
5 defined therein.

1 7. The method of claim 1, further including the step of
2 applying a pigmented sealer to the flat blank prior to said pressing
3 step.

1 8. The method of claim 7, applying the sealer to the
2 flat blank in an amount from about 4-10 g/m².

1 9. The method of claim 1, wherein said applying a
2 conditioning resin step is performed so as to apply the resin to a
3 surface of the flat blank in an amount of from about 20-200 gm/m².

1 10. The method of claim 1, wherein said steps are
2 performed in the order in which they are recited.

1 11. The method of claim 1, wherein the molded door skin
2 has a bond strength of at least about 2.5 N/mm².

1 12. The method of claim 1, wherein the resin applied to
2 the flat blank in said applying step includes one of urea
3 formaldehyde resin and melamine formaldehyde resin.

1 13. The method of claim 1, wherein said pre-heating step
2 is performed prior to said moisturizing step.

1 14. The method of claim 1, further including the step of
2 positioning the flat blank in a pre-press area prior to said pressing
3 step, and while the flat blank is in the pre-press area performing
4 said pre-heating step and simultaneously applying a moisturizer to
5 the flat blank.

1 15. The method of claim 1, wherein in said pressing step
2 the first platen remains stationary and the second platen is urged
3 toward the first platen in order to reform the blank positioned in
4 the press.

1 16. The method of claim 1, wherein the molded door skin
2 a substantially constant density of from about 800-1,200 kg/m³, and
3 wherein the density of the molded door blank is higher than the
4 density of the flat blank from which it is formed.

1 17. A method of making a hollow core door, comprising

2 the steps of:
 3 providing a flat skin wood composite blank;
 4 placing the blank between first and second
 5 platens of a heated press, the platens being heated to a
 6 temperature sufficient to soften the resin in the blank
 7 and to thereby soften the blank;
 8 closing the press by continuously moving at least one of
 9 the platens toward the other platen until the press attains a closed
 10 position and the blank therein has been reformed into a molded door
 11 skin having a plurality of panels defined therein;
 12 allowing thermal actuated resin in the molded skin to
 13 cure;
 14 removing the reformed blank from the press;
 15 and
 16 attaching a pair of reformed molded skins to a door frame
 17 to form a hollow core door.

1 *sub* 18. A hollow core door comprising:
 2 *all* a door frame;
 3 first and second door skins attached to said door frame
 4 so as to define a hollow core area there between, at least one of
 5 said skins being a molded door skin;
 6 said one molded door skin having molded therein a
 7 plurality of panels; and
 8 wherein said one molded door skin has a bond strength of
 9 at least about 2.0 N/mm².

1 19. The door of claim 18, wherein each of the first and second
 2 door skins is a molded door skin having a bond strength of at least
 3 about 2.5 N/mm².

1 20. The door of claim 18, wherein each of said first and
 2 second door skins is a molded door skin formed by pressing a loose

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3 bat or mat into a flat door blank having a density of at least about
4 550 kg/m³, and thereafter moisturizing, heating, and reforming in a
5 press said flat door blank into a molded door skin having the panels
6 molded therein, so that the bond strength of each of the skins is
7 increased relative to that of the original flat blanks from which
8 they are formed.

1 21. A method of making a molded door skin, the method
2 comprising the steps of:
3 providing a flat solid wood composite blank having a density of
4 at least about 550 kg/m³;
5 applying liquid thermal actuatable resin to the flat
6 blank;
7 positioning the flat blank in a press having first and second
8 platens;
9 heating the first and second platens each to a temperature of
10 at least about 320-425° F.;
11 closing the press at a predetermined closure rate so as to
12 reform the flat blank into a door skin including a plurality of
13 panels molded therein; and
14 allowing the resin in the reformed door skin to cure for
15 thereby forming a molded door skin.

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3 22. A press for molding door skins, comprising:
4 a) first and second platens, each of said platens
5 being heated;
6 b) a plurality of vents in least one of said platens;
7 and
8 c) an actuation for moving at least one of said
9 platens toward and away from the other of said platens for thereby
10 opening and closing the press.